Noble
ENVIRONMENTAL POWER

8 Railroad Ave.
Essex, CT
06426

7430 State Rt. 11
Churubusco, NY
12923

7294 Centerville Rd.
P.O. Box 72
Bliss, NY 14024

1387 E. Atwater Rd.
Ubly, MI
48475

June 18, 2007

To: Members of the Michigan Legislature

Re: Michigan Chamber of Commerce Memo Regarding Renewable Portfolio Mandates

Dear Members of the Legislature,

Noble Environmental Power is a leading wind energy developer with more than 4,000 megawatts of wind energy projects under development across the country. Michigan has abundant wind resources, and Noble is encouraged by the strong support shown for renewable energy in the state. Noble has identified several sites of interest in Michigan, and if fully developed, we estimate that our potential investment in the State's renewable energy infrastructure could be $1.5 to $2 billion.

Noble strongly disagrees with many of the statements contained in the recent (May 22) memorandum in which the Michigan Chamber of Commerce expresses concern regarding a Renewable Portfolio Standard (RPS):

- Complying with the RPS will not "cost Michigan ratepayers in excess of $6 billion" -- in fact, most of the money to build windparks needed to meet the RPS goals will result in **billions of dollars of private investment** in Michigan's renewable energy infrastructure.
- Wind energy is not expensive – building new windparks is less expensive than building new coal plants.
- Wind energy is not unreliable – modern, utility-scale windparks are highly reliable and predictable.
- Wind energy does not need additional "backup" generation.

Furthermore, if Michigan's renewable resources are to be harnessed, investors need the certainty and stability offered by a mandatory program. **Voluntary programs are beneficial, but simply do not create enough, stable demand to result in major development.** For example, in 2005, *the entire US voluntary market* was roughly equivalent to demand from a single mandatory state RPS program.[1]

Following is a point-by-point rebuttal of the Chamber memo. For the ease of the reader, excerpts from the Chamber memo are included (in textboxes). If you have any questions regarding the content of this memo, or other issues relating to RPS or wind energy, please do not hesitate to contact me.

Respectfully,

Anna Giovinetto
VP, Public Affairs
Tel: 860-395-9158
giovinettoa@noblepower.com

---

[1] In 2005, nationwide Green-e Certified (voluntary market) sales totaled **5.2 million MWh** *(Source: Green-e press release)*. In contrast, in 2006 demand from RPS-driven programs in either individual states or a combination of a few states easily exceeded this quantity: California, 30 million MWh; Pennsylvania, 6.6 million MWh; Texas, 4.2 million MWh (2005); New Jersey, 2.9 million MWh; Maryland, 2.4 million MWh; Massachusetts and Connecticut, 1 million MWh and 2 million MWh, respectively.

Noble
ENVIRONMENTAL POWER

Cost of Renewable Mandates - The chairman of the Public Service Commission, Peter Lark, has recommended in his 21st Century Energy Plan that Michigan impose a 10 percent renewable portfolio mandate by 2015. Complying with this mandate will cost Michigan ratepayers somewhere **in excess of $6 billion.**

Production Cost of Wind Energy
The 21st Century Energy Plan would require that by 2015 Michigan must purchase 8,540,000 MWh of renewable energy… By utilizing standard industry protocols of 1.5 MW per turbine combined with recent rate filings in Wisconsin that show the cost of wind energy per capacity at $1,800,000 per MW, we can determine that the total cost to purchase 8,540,000 MWh of wind energy is **$6,266,700,000.**

Noble respectfully submits that these assertions provide the wrong answers to the wrong questions.

First, the questions that *should* be asked are:

- Does Michigan need to build new sources of electrical generation?
- If so, then what are the alternatives, and what do they cost?

Michigan needs to build new generation sources. The Chamber memo discusses the cost of wind energy, but it doesn't compare it to the cost of the alternatives. In this memo, Noble asserts that **wind energy is one of the lowest-cost alternatives available.**

Second, the majority (if not all) of the windparks built to satisfy the Michigan RPS will be the product of **private investment,** so the cost of building these windparks is irrelevant relative to Michigan ratepayers.

- The RPS will not result in Michigan ratepayer money being used to build windparks.
- On the contrary, the RPS will result in **billions of dollars pouring into Michigan's economy** so that a **natural resource** Michigan has in **abundance** can be harnessed, and used to **reduce the $20 billion annually** that leaves the state in fuel purchases.
- Furthermore, numerous studies have shown that **increased reliance on wind energy *lowers* wholesale electricity prices**, which benefits all ratepayers.[2, 3]

The Chamber calculations also underestimate the amount of energy that can be produced from wind, and therefore overestimate the cost.

---

[2] **Wind on the Public Service Company of Colorado System: Cost Comparison to Natural Gas**; August, 2006.

[3] **The Colorado Renewable Energy Standard Ballot Initiative: Impacts on Jobs and the Economy**; Union of Concerned Scientists; October, 2004.

Noble
ENVIRONMENTAL POWER

Michigan Chamber Position on Renewable Energy
The Michigan Chamber of Commerce supports renewable energy and efforts to provide incentives to help make renewable energy more affordable in Michigan. We strongly oppose mandates of high-priced renewable energy that will drive up costs for all customer classes.

First, wind energy isn't "high-priced":

- Not only is wind energy arguably the **lowest-cost utility-scale renewable**, it is also one of the **lowest-cost sources of new electrical generation, period**.
- The following table shows estimated installed costs for various types of generation resources: [4]

Technology	Energy Source	Unit Size (MW)	Heat Rate (Btu/kWh)(a)	Annual Capital Costs (2006 $/kW)	Sources[b]
IGCC	Appalachian coal	600	8,600	2,500–3,500	EPA, EPRI, MIT, DOE
IGCC with carbon capture	Appalachian coal	600	9,750	2,900–3,900	EPA, EPRI, UN, MIT
Combined cycle	natural gas	400	6,500	800–1,000	GE
Combustion turbine	natural gas	100	8,500	500–700	GE
Nuclear	uranium	1,080	10,000	3,000–5,000	Westinghouse, NEI
Fuel cell[c]	natural gas	1	8,000	3,500–4,000	Fuel Cell Energy
Biomass	wood chips	40	14,000	2,500–3,500	CT Projects, NH DES
Hydro	water	5	N/A	3,000–4,000	NE Developer
Landfill gas	landfill gas	5	10,500	2,000–2,500	NE Plants
Combined heat and power[c]	natural gas	5	9,750	1,000–1,500	Solar Turbines
Solar photovoltaic	sun	1	N/A	4,000–6,000	UMASS RERL
Onshore wind	wind	1.5	N/A	1,500-2000	UMASS RERL, Levitan
Offshore wind	wind	3.5	N/A	2,000–2,500	UMASS RERL, Levitan

- What this table shows is that **the cost to build new onshore windparks is far less** than the cost of building new Integrated Gasification Combined Cycle (IGCC) facilities and new nuclear facilities.
- While the upfront cost of building a new natural gas combined cycle facility may be less than that of a new wind energy facility, **this cost does not take into account the price of fuel.**
- Thus, the electricity produced by the wind facility (which has no need to purchase fuel) will ultimately cost less, **saving Michigan ratepayers money.**
- **NOTE:** the take-home point is NOT that only wind should be built to the exclusion of everything else. **The point is that by incorporating wind into the mix, Michigan's reliance on expensive sources of electricity can be reduced, with no detrimental impact to system reliability.**

[4] New England Electricity Scenario Analysis; First Draft - May, 2007.

Noble
ENVIRONMENTAL POWER

Second, **major investment** in Michigan's renewable resources **will not happen** without a mandate.

- Noble strongly supports competitive, free markets. However, **building windparks** – like building any form of electrical generation – requires **significant capital investment.**
- In Noble's case, our plans include approximately 750-1,000 megawatts of windparks in Michigan.
- This represents an investment of **$1.5 - $2 billion of private capital** into Michigan's renewable energy infrastructure.
- **All investors expect a return on their investment** – this holds true for those who invest in wind energy, as well as for those who invest in utilities.
- Utility-owned fossil and nuclear facilities have **fuel-price adders** built into their electricity sale contracts that ensure a minimum rate of return for their investors, and create ongoing volatility (and potentially substantially higher costs to ratepayers) that is not found in the fixed price cost of wind energy.
- Wind energy facilities don't need fuel-price adders, but **investors need to know that there will be a market** for the renewable energy credits (RECs) produced by windparks (such markets as are created by the implementation of State RPS programs).
- If Michigan is not willing to create this market in the form of a mandate, then **investment capital will be redirected to other states** instead.

Other Costs and Issues Associated with Wind Energy
There are a number of other issues and costs associated with wind energy which are difficult to calculate but have the potential to further complicate and increase the costs of meeting a renewable energy mandate.

- In fact, the exact opposite of the chamber's claim is true. **Predicting the cost of wind energy is easier** than with any other form of generation, because no predictions regarding **future fuel costs** are required.
- The only costs associated with wind energy generation are set on the day the wind energy project is built. This means that changes in fuel price, inflation rates, the cost of complying with new environmental requirements, rail or truck transportation -- all costs that affect the price of electricity from fossil-fuel based generation on an ongoing basis -- do not materially impact the cost of wind generated energy over the life of a wind project.
- Every day, traders in the commodity markets make millions of dollars by **placing bets on the future price** of oil, natural gas, coal, and uranium.
- No market exists to bet on the price of **wind energy**, because it's **predictable**.
- In the energy markets predictability translates into **lower, more stable prices in the wholesale market.**

Noble
ENVIRONMENTAL POWER

- *Transmission Costs* - The plan itself notes that the lack of transmission capacity will be a serious impediment to the installation of wind energy. In many cases, Michigan does not have existing built transmission in the parts of our state where the wind is optimal for energy production. Addressing this issue could cost ratepayers hundreds of millions of dollars.

- Michigan's transmission infrastructure is in need of major upgrades, regardless of which sources of supply are used to meet future energy needs.
  - **Any new generation source** will likely require the addition of new transmission capacity.
  - To the extent that windparks are typically **more geographically dispersed** than, say, a 1,000 MW coal or nuclear facility, windparks can often **"squeeze in" on existing transmission lines,** whereas a single baseload facility would definitely require new capacity.
- Furthermore, **50% of the cost of transmission upgrades is borne by the generator.**
  - In the case of power that is sold under long-term contracts, this cost is ultimately passed on to the ratepayer – however, since the cost of electricity from a new wind facility is lower than the cost of electricity from a new coal or new nuclear facility, **the ratepayer ultimately saves money if transmission is built for wind energy.**
  - In the case of power that is sold into the spot market, wind energy is a "price taker", which means that **the cost of the transmission is essentially borne by the wind project developer/investor,** and not the ratepayer.
  - In either case, simple economics will drive independent wind developers to **seek sites** that offer the most viable wind resources with the **least need for transmission upgrades.**

- *Zoning and Siting Issues* - Michigan's best wind is generally located along the Great Lakes shorelines. Current efforts to locate wind energy facilities along Lake Michigan have run into local zoning battles resulting in the cancellation of some wind energy projects.

- As with any type of new electrical generating facility, **community relations** play an important role in the success of wind energy projects.
- The Legislature should feel confident that communities across the country that have chosen to host windparks feel they made the right decision.
- Ultimately, the decision to host a windpark rests with the community. The RPS will not result in the construction of windparks against a community's wishes.
- The success of Michigan's wind energy industry, and the success of individual projects, will fall on the shoulders of individual developers, not on the Legislature.

In the case of Noble Environmental Power, we have a **very proactive community outreach program,** and we believe that this has been a key factor in our success in Michigan and other states.

- We have conducted public opinion polls in the areas surrounding all of our projects, and we consistently have the support of **85% or more of the local residents.**

- We attribute this overwhelming support to the fact that the public recognizes that "we have to do something" to address our **future energy challenges.**
- People know that **wind energy is clean, safe, reliable**, and it's also **great for the local and regional economy.**

> - *Federal Tax Credit* – The federal tax credit for wind energy is extended on a year-to-year basis. There is often a vigorous debate about the value of this credit. If Congress were to allow the wind production tax credit to expire, the price of new wind power would effectively rise by approximately 20 percent.

- The Federal Production Tax Credit (PTC) has been **continuously in effect** since 1992.
- Currently, the PTC extends to December 31, 2008, and there is a bill in Congress that would extend it for **5 more years, to 2013** (H.R. 197).
- Any wind energy project that **goes into operation** while the PTC is in effect receives the credit for each MWh of wind energy produced for **10 years**.
- History has shown that at times when it seemed possible the PTC might lapse, growth of the wind industry has stalled – in other words, in the highly unlikely event that the PTC were to lapse at some point in the next few years, the price of new wind power would not increase, but rather, further development would be delayed until the PTC was reinstated.[5]

The RPS can be expected to **LOWER** the cost of deploying renewables in Michigan, which ultimately will result in **savings to ratepayers:**

- By providing **certainty for investors** (by creating set demand schedule for renewable energy purchases over time), the RPS would **reduce the cost of capital,** thereby lowering project development costs, which will result in lower prices for renewable energy.
- By providing **certainty for project developers**, the RPS would result in **more efficient project development** and **economies of scale**, thereby lowering project development costs, which will result in lower prices for renewable energy.
- By creating **incentives for project developers to focus** on Michigan, the RPS will result in **greater competition** among developers for contracts, thereby **lowering bid prices**.
- By creating **demand for renewable energy technologies**, the RPS will encourage manufacturers to **locate production facilities** in Michigan, thereby **lowering the cost of components.**
    - In particular, **manufacturers of major components** (like blades and tower sections) are **more likely to locate production facilities** in a state that has an RPS program.
- By creating an **entirely new, high-tech market niche**, the RPS will result in Michigan being **strategically positioned** to help other states meet the **energy challenges of the future.**

---

[5] **Wind Energy Production Tax Credit Fact Sheet,** American Wind Energy Association; January, 2007; http://www.awea.org/legislative/pdf/PTC_Factsheet.pdf

Noble
ENVIRONMENTAL POWER

Michigan can not build a 21st century high tech economy if we do not have reliable consistent power. Problematic to Michigan ratepayers is that all of these costs associated with renewable energy will be incurred, yet Michigan will still not have enough energy to meet future demands. The 21st Century Energy Plan envisions that the lion's share of renewable sourced electricity will come from wind. But a recent report released by the Next Energy Center prepared for the Michigan Department of Environmental Quality found that due to the intermittency of wind the contribution of wind energy towards meeting energy capacity needs is only 12 percent. This means that for each 100 MW of wind capacity, you must add 88 MW of other more dependable generation to meet capacity needs. Therefore, if Michigan does spend **six billion dollars** to deploy thousands of wind turbines, it will still have to spend billions of dollars on new base load generation to back up wind turbines in order to satisfy Michigan's future electricity needs. This is an unnecessary expense that Michigan simply cannot afford.

- Modern, investment-grade wind energy facilities are **highly reliable and predictable.**
- As noted earlier, the RPS would cause **billions of dollars of private investment** to flow to develop Michigan's renewable energy infrastructure.
- The DEQ study says that wind facilities will be assigned a value of 12% in the ***capacity* market**. The capacity market is related to, but different from, the ***energy* market.**
    - In this context, capacity refers to "reserve margins", which serve to provide a buffer of supply in the energy market. The buffer is there to guard against sudden and unpredicted swings in supply or demand.
    - The capacity market assigns value to "availability", which is also referred to as "dispatchability" – the ability to provide electricity quickly if requested – during "super peak" hours (times of high demand).
    - Intermittent resources like wind are by definition not dispatchable, so they are not highly valued as capacity resources.
    - Thus, there is **nothing surprising or notable** about the fact that wind isn't the resource of choice when it comes to building reserve margins.
- Different generation sources have **different characteristics,** and this makes them each more or less suitable for **different roles** in the generation portfolio.
    - No one resource offers a perfect solution.
    - A strategic energy policy seeks **strength and flexibility** through **diversity and balance**.
- All forms of electrical generation need backup. **Wind energy doesn't need any more backup than other forms of generation**, and in fact, it could be argued that it **needs less backup**, because the individual units are smaller.
    - If a 1,000 MW nuclear plant trips offline, it has a very serious and immediate impact on the grid.
    - In contrast, wind turbines are typically 1.5 – 2.5 MW apiece, so if a single unit goes offline, the impact is much less significant.

Noble
ENVIRONMENTAL POWER

- Significant amounts of wind energy can be added to the grid with no detrimental effect to grid stability.[6,7]

Job Creation
Proponents of wind energy claim that by mandating renewable energy it will lead to job creation. However, proponents usually can't back up these claims with facts. For a quick comparison, for under half the cost of a 10 percent renewable mandate, Michigan could build a new nuclear plant (cost $2 to $3 billion). A new nuclear plant would provide 1,200 MW of reliable energy and would create 1,800 temporary construction jobs and 500 permanent jobs. The average salary for nuclear engineers in 2003 was $80,000. In addition, a nuclear plant would have all of the clean air benefits that wind energy provides (Source *Michigan Forward*, March/April '07, page 10).

- **Wind energy creates 27% more jobs per installed kW** than any other form of electrical generation.[8]
  - Building just 300 megawatts of windparks would create some **725 construction jobs**, and at least **two dozen permanent jobs**.
  - 300 megawatts of wind would also put **more than $350,000,000** back into the local community over a 20-year period in the form of permanent jobs, easement payments to landowners, and tax payments to local schools, towns, and counties.
  - It would take approximately **twelve 300 MW windparks** to produce as much electricity as a 1,200 MW nuclear plant, so the windparks would clearly create far more economic development.
- With its **extensive manufacturing base**, Michigan is extremely well-positioned to benefit from an expansion of the national wind energy industry.
  - A report released in 2004 by the Renewable Energy Policy Project (REPP) compared the potential of all 50 states to benefit from a surge in turbine component manufacturing jobs.
  - The report estimates that 1,045 Michigan-based companies could be involved in the manufacture of turbine components, which would support the creation of 66,550 jobs in Michigan (the full-time job equivalent would be 8,549).[9]

---

[6] **Utility Wind Integration State of the Art,** Utility Wind Integration Group; May, 2006; http://www.uwig.org/UWIGIntSummary.pdf . This study found that wind energy grid penetration could safely exceed 10% with no adverse impact on grid stability. The study was performed by UWIG in cooperation with the American Public Power Association, Edison Electric Institute, National Rural Electric Cooperative Association, and together these organizations represent some 90% of the U.S. electricity market.

[7] **Integrating Utility-scale Wind Energy onto the Grid: An Informational Resource**, American Wind Energy Association; November, 2006; http://www.awea.org/pubs/factsheets/061117_Integrating_Utility_scale_Wind.pdf

[8] National Renewable Energy Labs (NREL) and the DOE's Energy Efficiency and Renewable Energy.

[9] **Wind Turbine Development: Location of Manufacturing Activity;** Renewable Energy Policy Project; September, 2004.

Noble
ENVIRONMENTAL POWER

Conclusion
The Michigan Chamber urges you to vote 'No' on renewable portfolio mandates. The facts show that such a mandate will drive up energy costs and do little for long-term energy reliability.

The facts show that in most cases, RPS programs have minimal impacts on electricity rates. A study recently released by Lawrence Berkeley National Labs (LBNL) synthesizes and analyzes the results and methodologies of 28 distinct state or utility level RPS cost impact analyses completed since 1998:[10]

- The report found that in the majority of cases, **RPS programs pay for themselves:** the cost impact of RPS programs to ratepayers is either negative (a savings), neutral (no cost), or minimal.
- Seventy percent of the state RPS cost studies had electricity **rate increases of no greater than one percent** in the year that each modeled RPS policy reaches its peak percentage target.
- In six of those studies, **electricity consumers are predicted to experience cost *savings*** as a result of the state RPS policies being modeled.
- The median bill impact across all of the studies is an increase of **only $0.38 per month.**

The overall conclusion of the LBNL report is that:

> "With few exceptions, the long-term electricity rate impacts of state RPS policies are projected to be relatively modest.
>
> "When these electricity cost impacts are combined with possible state RPS-induced natural gas price reductions and corresponding gas bill savings, the overall cost impacts are even smaller."

Noble Environmental Power urges you to **vote YES** on a **renewable portfolio standard** for Michigan. The facts show that RPS programs are **smart policy** that benefits the **environment** AND the **economy**.

---

[10] **Weighing the Costs and Benefits of State Renewable Portfolio Standards: A Comparative Analysis of State-Level Policy Impact Projections**; Lawrence Berkeley National Laboratories; March, 2007. The report can be downloaded from: http://eetd.lbl.gov/ea/ems/reports/61580.pdf A PowerPoint presentation that summarizes key findings can be found at: http://eetd.lbl.gov/ea/ems/reports/61580-ppt.pdf